

TEXAS DEPARTMENT OF INSURANCE

Engineering Services / MC 103-3A 333 Guadalupe Street P.O. Box 149104 Austin, Texas 78714-9104
Phone No. (512) 322-2212 Fax No. (512) 463-6693

PRODUCT EVALUATION RC-102

Effective November 1, 2003

*The following product has been evaluated for compliance with the wind loads specified in the **International Residential Code (IRC)** and the **International Building Code (IBC)**. This product shall be subject to reevaluation 3 years after the effective date.*

This product evaluation is not an endorsement of this product or a recommendation that this product be used. The Texas Department of Insurance has not authorized the use of any information contained in the product evaluation for advertising, or other commercial or promotional purpose.

This product evaluation is intended for use by those individuals who are following the design wind load criteria in Chapter 3 of the IRC and Section 1609 of the IBC. The design loads shall not exceed the allowable wind loads shown in this product evaluation. This product evaluation does not relieve a Texas licensed engineer of his responsibilities as outlined in the Texas Insurance Code, the Texas Administrative Code and the Texas Engineering Practice Act.

Interlocking Concrete Roofing Tiles manufactured by

Eagle Roofing Products
3546 N. Riverside Avenue
Rialto, California 92377
Telephone: (909) 355-6000

will be accepted for use in designated catastrophe areas along the Texas Gulf Coast when installed in accordance with this product evaluation report, the building specifications adopted by the Texas Department of Insurance, and the manufacturer's installation instructions as referenced in the document entitled "Concrete and Clay Roof Tile Design Criteria Installation Manual for Moderate Climate Regions," September, 2002.

PRODUCT DESCRIPTION

Eagle Roofing Products roofing tiles are interlocking tiles that are composed of Type II Portland Cement, washed sand, and proprietary additives. Mineral coloring oxides are either added to or mixed with the Portland cement and water for surface application following extrusion. The tiles are available in a variety of colors. Each tile has interlocking sidelaps designed to resist surface water penetration. All tiles have continuous protruding head lugs on the underside. The head lugs provide for mechanical attachment over battens or provide a stable foundation for attachment to solid decking.

Note: The Eagle Roofing Products roofing tiles specified in this report are to be installed mechanically with fasteners. The roofing tiles may be secured either directly to the roof deck or over battens. Holes are provided at the top of each roofing tile for fastening as specified in this report.

Adhesive Attachment of Roofing Tiles: Roofing tiles manufactured by Eagle Roofing Products may also be installed using Polypro AH160 Roof Tile Adhesive. Requirements for this method of installation are specified in Texas Department of Insurance product evaluation report RC-22.

Roofing Tile Profile Classifications: Roofing tile profiles shall be classified as one of the following:

Flat/Low profile: Flat/Low profile tiles are defined as tiles having a rise equal to or less than $\frac{1}{2}$ inch.

Medium profile: Medium profile tiles are defined as tiles having a rise greater than $\frac{1}{2}$ inch and a rise to width ratio of less than or equal to 1.5.

High/Barrel profile: High profile tiles are defined as those tiles having a rise to width ratio greater than 1.5.

The roofing tile profile classifications for the Eagle Roofing Products Company roofing tiles that apply to this product evaluation report are specified in Table 1.

Table 1
Roofing Tile Designations and Profile Classifications

Tile Designation	Profile Classification
Capistrano	High/Barrel
Malibu	Medium
Ponderosa	Flat/Low
Bel Air	Flat/Low
Estate	Flat/Low
Double Eagle Bel Air	Flat/Low
Double Eagle Ponderosa	Flat/Low
Golden Eagle	Flat/Low

Roofing Tile Dimensions: The roofing tiles listed in Table 1 are 17 inches long, $12\frac{3}{8}$ inches wide, and nominally $\frac{1}{2}$ inch thick.

INSTALLATION INSTRUCTIONS and LIMITATIONS

Roof Framing and Roof Deck: Roof framing members shall be in accordance with either the International Residential Code or the International Building Code. The roof framing members shall not be spaced greater than 24 inches on center. The roof deck shall be solidly sheathed with minimum $\frac{15}{32}$ " wood structural panels (plywood or OSB). The roof deck shall be fastened to the roof framing members in accordance with either the International Residential Code or the International Building Code.

If the existing roof deck is a spaced board roof deck, then the spaced boards shall either be removed or covered with minimum $\frac{15}{32}$ " thick wood structural panels (plywood or OSB). The wood structural sheathing shall be installed over the spaced boards in accordance with either the International Residential Code or the International Building Code.

Metal drip edge: A metal drip edge shall be installed as specified in the manufacturer's installation instructions as referenced in the document entitled "Concrete and Clay Roof Tile Design Criteria Installation Manual for Moderate Climate Regions," September, 2002.

Roof underlayment:

3:12 roof slope up to 4:12 roof slope: Two layers of underlayment complying with ASTM D 226, Type II (No. 30 asphalt felt) or equivalent. The underlayment shall be installed as specified in either the International Residential Code or the International Building Code and the manufacturer's installation instructions as referenced in the document entitled "Concrete and Clay Roof Tile Design Criteria Installation Manual for Moderate Climate Regions," September, 2002. Corrosion resistant fasteners shall be used.

Above 4:12 roof slope: One layer of underlayment complying with ASTM D 226, Type II (No. 30 asphalt felt) or equivalent. The underlayment shall be lapped a minimum of 4" at the head laps and a minimum of 6" at the side laps. The underlayment shall be installed as specified in either the International Residential Code or the International Building Code and the manufacturer's installation instructions as referenced in the document entitled "Concrete and Clay Roof Tile Design Criteria Installation Manual for Moderate Climate Regions," September, 2002. Corrosion resistant fasteners shall be used.

Battens: The roofing tiles may be installed over battens. For roof slopes greater than 7:12, battens are required. As a minimum, the battens shall be nominal 1x2 wood members. The battens shall be spaced a maximum of 14" on center (allow for a 3" headlap). The battens shall be fastened to the roof deck with minimum 8d common wire or box nails or equivalent size nail. The nails shall be spaced a maximum of 24" on center. As an alternative, battens may be fastened to the roof deck with No. 16 gauge by $\frac{7}{16}$ " crown by $1\frac{1}{2}$ " long staples. The staples shall be spaced a maximum of 12" on center. Batten ends shall be separated a minimum of $\frac{1}{2}$ " every 4 feet to allow for drainage.

Roofing Tile Installation: The limitations on mean roof height and roof slope for installing the roofing tiles shall be in accordance with the following guidelines:

Roof Slope Limitations: The roofing tiles shall not be installed on buildings with a roof slope of less than 3:12 and a roof slope greater than 12:12. Unless specified otherwise, the maximum roof slope for the roofing tiles specified in Tables 3 and 4 shall be 12:12.

Mean Roof Height Limitations: The mean roof height limitations shall be as specified in Tables 2 through 4. The roofing tiles shall not be installed on structures with a mean roof height greater than 60 feet.

General: The roofing tiles and the underlayment system shall be clean and dry at the time of their application.

The roofing tiles shall be installed in accordance with this product evaluation report and the manufacturer's installation instructions as referenced in the document entitled "Concrete and Clay Roof Tile Design Criteria Installation Manual for Moderate Climate Regions," September, 2002.

The roofing tiles shall be laid out from the right to the left, starting at the right rake. The roofing tiles shall be installed with a 3" headlap.

NOTE: If battens are used, then the fasteners shall penetrate through the batten and into the roof deck.

Fasteners: The roofing tiles shall be mechanically fastened to the roof deck. Fasteners must be long enough to penetrate a minimum of $\frac{3}{4}$ " into or through the roof deck. The following types of fasteners may be required, depending on the installation method used as specified in Tables 2 through 4:

Screws: No. 8 x $2\frac{1}{2}$ " long steel wood screws.

Nails: One of the following:

1. 10d ring shank nails (3" long and a shank diameter of 0.121").
2. 10d smooth shank or screw shank nails (3" long; smooth shank diameter of 0.131 inches; screw shank diameter of 0.128").

Clips: Eagle Talon© Clips. The clips are 18 gauge x 0.5" wide. They are manufactured of either galvanized steel or Type 304 stainless steel. The following clips sizes are used:

- $\frac{3}{4}$ " (Flat/Low tiles - Eave)
- $2\frac{5}{8}$ " (Flat/Low tiles)
- $2\frac{7}{8}$ " (Medium tiles)
- $3\frac{3}{16}$ " (High/barrel tiles)

Clips (continued): Each clip shall be secured to the roof deck with one (1) $1\frac{1}{4}$ " long hot dip galvanized roofing nail (0.128" shank diameter). The roofing nail shall be placed in the hole closest to the tile for clips that have more than one hole. The clips shall be hooked on the water channel at the lower end of the roofing tile.

Rake Tiles: Rake tiles shall be secured to Southern Yellow Pine lumber framing with two (2) 10d box nails (3" long, 0.128" shank diameter).

Hip and Ridge Tiles: The hip and ridge tiles shall be fastened to hip and ridge boards (Southern Pine dimension lumber of sufficient height to support the hip and ridge tiles) with either one (1) 10d box nail (3" long, 0.128" shank diameter) or one (1) No. 8 x $2\frac{1}{2}$ " long steel wood screw.

Note: A copy of the document "Concrete and Clay Roof Tile Design Criteria Installation Manual for Moderate Climate Regions," September, 2002 shall be available at the job site. All fasteners shall be corrosion resistant as specified in the International Residential Code (IRC) and the International Building Code (IBC).

Table 2
Mean Roof Height Limitations

Roof Slope: $\geq 3:12$ and $\leq 7:12$
Installation WITHOUT Battens

Tile Profile	Fastener Requirements	Mean Roof Height Limitation (ft)		
		Inland II	Inland I	Seaward
Flat/Low	One (1) 10d smooth or screw shank nail and One (1) Clip	50	20	N/A
Medium		50	20	N/A
High/Barrel		60	60	60
Flat/Low	Two (2) 10d smooth or screw shank nails and One (1) Clip	60	60	60
Medium		60	60	60
High/Barrel		60	60	60
Flat/Low	Two (2) 10d ring shank nails	60	60	60
Medium		60	60	50
High/Barrel		60	40	15
Flat/Low	One (1) No. 8 screw	60	60	60
Medium		60	60	30
High/Barrel		60	60	15
Flat/Low	Two (2) No. 8 screws	60	60	60
Medium		60	60	60
High/Barrel		60	60	60

Table 3
Mean Roof Height Limitations

Roof Slope: $\geq 3:12$ and $\leq 7:12$
Installation WITH Battens

Tile Profile	Fastener Requirements	Mean Roof Height Limitation (ft)		
		Inland II	Inland I	Seaward
Flat/Low	One (1) 10d smooth or screw shank nail and One (1) Clip	60	30	15
Medium		60	30	15
High/Barrel		60	40	20
Flat/Low	Two (2) 10d smooth or screw shank nails and One (1) Clip	60	60	60
Medium		60	60	60
High/Barrel		60	60	60
Flat/Low	Two (2) 10d ring shank nails	40	15	N/A
Medium		60	60	50
High/Barrel		60	30	N/A
Flat/Low	One (1) No. 8 screw	50	20	N/A
Medium		60	50	20
High/Barrel		50	20	N/A
Flat/Low	Two (2) No. 8 screws	60	60	50
Medium		60	60	60
High/Barrel		60	60	60

Table 4
Mean Roof Height Limitations

Roof Slope: > 7:12 and ≤ 12:12
Installation WITH Battens

Tile Profile	Fastener Requirements	Mean Roof Height Limitation (ft)		
		Inland II	Inland I	Seaward
Flat/Low	One (1) 10d smooth or screw shank nail and One (1) Clip	60	60	60
Medium		60	60	60
High/Barrel		60	60	60
Flat/Low	Two (2) 10d smooth or screw shank nails and One (1) Clip	60	60	60
Medium		60	60	60
High/Barrel		60	60	60
Flat/Low	Two (2) 10d ring shank nails	60	60	40
Medium		60	60	60
High/Barrel		60	60	60
Flat/Low	One (1) No. 8 screw	60	60	50
Medium		60	60	60
High/Barrel		60	60	50
Flat/Low	Two (2) No. 8 screws	60	60	60
Medium		60	60	60
High/Barrel		60	60	60